DOCUMENT RESUME

ED 452 853 IR 058 112

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TITLE	The User Interface: Glitz versus Content.
PUB DATE	2000-10-00
NOTE	12p.; In: ALIA 2000. Capitalising on Knowledge: The Information Profession in the 21st Century (Canberra, Australia, October 23-26, 2000); see IR 058 109.
AVAILABLE FROM	For full text: http://www.alia.org.au/conferences/alia2000/proceedings/tony.barry.html.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Academic Libraries; Computer Graphics; *Computer Interfaces; *Design Preferences; Disabilities; *Electronic Libraries; Foreign Countries; Higher Education; Library Surveys; Problems; User Needs (Information); World Wide Web
IDENTIFIERS	Australia; Home Pages; HTML; Metadata; *Web Site Design; *Web Sites

ABSTRACT

This survey examined the home pages of 36 Australian university library World Wide Web sites. Reports were run on these pages, using a service that checks the HTML for validity and reports errors, a service that checks usability by the visually disabled, and a program that checks the HTML, corrects and reports errors, and improves efficiency style specifications. The following data were extracted: the size in bytes of each report and the source; the number of errors encountered; the download time for the page; and the total size of the page and associated graphics. A table presents numeric results, and findings are reported related to use of graphics, download times, quality of HTML, frames, scripting, metatagging, and disability testing. Problems with the Web sites are summarized. The paper also provides a list of what to avoid in Web site design in general and specifically for library Web sites. (MES)

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The User Interface: Glitz versus Content

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Proceedings

The User Interface: glitz versus content

Tony Barry

Introduction

Building new client software for interfaces to library systems is over. The user community will strongly resist another piece of software to view information. They want to view everything through the one interface, the browser. Attempts to modify this interface, such as the Java based Dynix client, while it may prove attractive features[BIBLIO] will be resisted by the casual user.

Libraries cannot control what equipment will be used to view their web sites. Their users will have a mix of equipment of different ages using different operating systems of different version. They will use different browser software with a variety of different versions and they may choose to turn off various features or override them. Libraries are not in control of how their information will appear on the users screen. With the stress on the remote delivery of service the lack of bandwidth to many patrons is an important consideration to avoid the "world wide wait" syndrome.

Normally a library will try and provide, as far as possible, equality of service to its various categories of patrons. This is not true of commercial sites.

Commercial versus library sites

We see many commercial sites with animated graphics which can only be viewed adequately with high end equipment. Why is this?

Commercial sites succeed by the number of people who view their site. For them to sell a product or service they need to attract people to the site and a pleasant 'viewing experience' is important. Also the people with money to spend tend to be those with the better equipment! Commercial sites are not there to reach everybody. They want to reach those people will generate revenue. This is especially true of sites they rely on advertising as their revenue source are paid on the basis of the number of visitors..

Libraries are not like that. They are close to natural monopoly for many of their services. They must succeed through content. Commercial sites succeed through design. This is not to say that content is unimportant to commercial sites and design unimportant to libraries only the stress is different.

Conflict between appearance and content

HTML is a markup language which, in its latest manifestation as XHTML[W3C], is moving to divorce structural markup from stylistic information, to separate content from display. Appearance is determined by the browser which may lack the capability to display what the designer intends. Also the user might deliberately disable some features. You cant make it look the same so why try? Yet web designer continue to spend vast effort on achieving the right appearance even using proprietary tags [SMITH] which only exist in a particular browser knowing it wont look the same anyway.

We are seeing the influence of designers who have transferred from a print environment and who believe appearance to be central. They approach content as a sculptor approaches a stone and feel

that what they produce will be viewed by fellow artists when the viewers may be geologists. The print environment is one where the designer determines what is seen and there is no question that the viewer has anything but a static role to play.

But the designer does not exist in isolation. Approval processes for publications which require agreement from senior management before a publication goes out the door are still applied. But for print they are applied to a technology, print, which preserves mistakes whereas on the web errors can be modified as detected. The approval processes can be evolutionary and more relaxed.

Managers have another problem. Often they are older and have not the flexibility to cope with the new medium. They apply print habits of judgment to what they see. Their judgment might well be based on seeing a printed version of the page coupled with a demonstration on their local, and therefore fast, network. In the library world they may well be thinking of the flashier commercial sites they have seen, again on the local fast networks, and they wish to emulate them. What they should be doing is considering what the end user can , or might choose, to see. While I have no explicit evidence for this I suspect that:

The usability of a web page is inversely proportional to the degree if interest given to it by a senior manager.

Osterbauer and others at AusWeb2000 had some interesting comments to make on commercial sites. [OSTERBAUER]

We need a new paradigm in design where the author determines content and the designer (who may be the author) established guidance to enable the readers to provide a satisfactory appearance for their own needs. The end user should be enabled so as to easily modify the appearance of the document rather than being forced into the design decisions of the designer.

Rules of good web design

Nielson's 1996 paper is still a good start [NIELSON1996] and he has extended this [NIELSON1999]. His original list of what to avoid is:

1. Using Frames
2. Gratuitous Use of Bleeding-Edge Technology
3. Scrolling Text, Marquees, and Constantly Running Animations
4. Complex URLs
5. Orphan Pages
6. Long Scrolling Pages
7. Lack of Navigation Support
8. Non-Standard Link Colors
9. Outdated Information
10. Overly Long Download Times

In the context of libraries I would add to this list of what to avoid:

1. Graphics especially big graphics
2. Fixed pixel width tables
3. Tables embedded in tables for layout purposes
4. Reliance on colour to provide information
5. Scripting (or provide alternatives)
6. Plugins which are not supplied with browsers
7. Propriety tags

I would promote the use of:

1. Text equivalents to all images and multimedia via ALT tags
2. Headers for tables
3. Descriptions for tables
4. Summaries for graphs and charts
5. Standard HTML specifying the DTD used

A number of the items in this list are to ensure that the visually impaired can make use of the service and this should be a strong consideration of design for libraries. [W3C99]

Survey and methodology

The survey looked at the home page of each universities web site. Where the site used frames the page included in the main content page. The sites and URLs are in Table 1:

Table 1

Library sites	
Australian Defence Force Academy	http://www.lib.adfa.edu.au:85/
Australian Catholic University	http://jude.aquinas.acu.edu.au/aquinas/callib1.htm
Bond University	http://www.bond.edu.au/library/index.htm
Central Queensland University	http://www.library.cqu.edu.au/
Charles Sturt University	http://www.csu.edu.au/division/library/libhp.htm
Curtin University of Technology	http://www.curtin.edu.au/curtin/library/
Deakin University Library	http://www.deakin.edu.au/library
Edith Cowan University	http://www.cowan.edu.au/library/
Flinders University	http://www.lib.flinders.edu.au/
Griffith University	http://www.gu.edu.au/home/option5.html
James Cook University	http://www.jcu.edu.au/gen/Library/homepage.html
La Trobe University	http://www.lib.latrobe.edu.au/library.html
Macquarie University	http://www.lib.mq.edu.au/
Monash University	http://www.lib.monash.edu.au/
Murdoch University	http://wwwlib.murdoch.edu.au/
Northern Territory University	http://www.ntu.edu.au/library/
Queensland University of Technology	http://wwwlib.qut.edu.au/

Royal Melbourne Institute of Technology	http://www.lib.rmit.edu.au/
Southern Cross University	http://www.scu.edu.au/library/
Swinburne University of Technology	http://www.swin.edu.au/lib/welcome.html
University of Adelaide	http://library.adelaide.edu.au/
University of Canberra	http://www.canberra.edu.au/library/index.html
University of Melbourne	http://www.lib.unimelb.edu.au/
University of New England	http://www.une.edu.au/~library/library.htm
University of New South Wales	http://www.library.unsw.edu.au
University of Newcastle	http://www.library.newcastle.edu.au/
University of Queensland	http://www.library.uq.edu.au/index.html
University of South Australia	http://www.unisa.edu.au/library/libhome.htm
University of Southern Queensland	http://www.usq.edu.au/library/
University of Sydney	http://www.library.usyd.edu.au/
University of Tasmania	http://www.utas.edu.au/docs/library/index.html
University of Technology, Sydney	http://www.uts.edu.au/div/library/
University of the Sunshine Coast	http://www.usc.edu.au/library/library1.html
University of Western Australia	http://www.library.uwa.edu.au/
University of Wollongong	http://www-library.uow.edu.au/
Victoria University	http://www.vu.edu.au/library/

Reports

Reports were then run on these pages from:

The W3C Validation service [W3CV]

This service checks the html for validity and gives a detailed report on errors found.

The Bobby disability service [CAST}

This service checks to see if it is useable by the visually disabled.

The MacOS version of Tidy program [TIDY]

This program checks the html, corrects and reports on errors and improves efficiency style specifications. It provided a separate error report.

The reports were then run into fields of a FileMaker Pro data base and also the page source from the browser. The database can be obtained from the author should anybody wish to do further analysis.

Data extracted

The following data was extracted and added in separate fields of the database

- The size in bytes of each report and the source
- The number of errors encountered from the Tidy report and from W3C
- The download time for the whole page (this includes the graphics) at 28k baud in kbs.
- The total size of the page and associated graphics

From this a number of additional measure were calculated which are discussed in the analysis

The lack of accurate, or any DTD statements, created difficulties. In some cases fewer errors might have been reported had the DTD been accurately specified.. It would appear that some sites which started at a lower level of HTML, when developing the site, introduced HTML tags from later versions. These would be reported as formal errors.

Results and analysis

The numeric results are presented in Table 2.

Table 2

Library	Source size	W3C size	Bobby size	Tidy size	Download time	Tidy errors no.	Total size	W3C errors	% graphics	Errors/K
Australian Defence Force Academy	25140	14383	13624	24447	53.4	76	80.65	67	69	2.91
Australian Catholic University	1881	4449	8241	2009	13.82	19	44.34	20	96	10.62
Australian National University	24255	1331	13122	19623	29.34	16	62.41	4	62	0.42
Bond University	9167	3682	10865	7821	27.12	20	72.43	16	87	2.01
Central Queensland University	6260	40000	56.32	7118	25.64	24	56.32	220	89	19.96
Charles Sturt University	4296	1519	11469	4489	11.41	2	15.87	4	73	0.72
Curtin University of Technology	7647	26919	11321	8995	15.51	44	41.44	165	82	13.99

Deakin University Library	9052	8538	14849	10580	16.3[illegible]	31	24.78	39	64	3.96
Edith Cowan University	31940	62301	21698	25061	40.34	95	93.02	312	66	6.52
Flinders University	6260	2604	11801	8888	8.14	15	14.84	10	58	2.04
Griffith University	1093	786	7397	1093	0.81	1	1.12	1	4	0.94
James Cook University	17577	4368	11757	15970	16.07	19	41.67	20	58	1.14
La Trobe University	10975	1342	11074	10080	6.06	34	14.6	4	26	1.77
Macquarie University	10005	1872	11832	10381	36.62	6	54.42	7	82	0.67
Monash University	6702	10926	9508	6510	5.48	53	14.32	65	54	9.01
Murdoch University	4632	3496	10075	4931	10.91	29	23.08	19	80	5.31
Northern Territory University	15973	11025	18066	13348	19.21	50	36.74	57	57	3.43
Queensland University of Technology	20505	3271	15396	20566	32.24	16	71.08	17	71	0.82
Royal Melbourne Institute of Technology	5325	1268	9580	5321	51.26	3	150.32	3	96	0.58
Southern Cross University	17380	10278	NA	NA	13.58	72	108.3	55	84	3.74
Swinburne University of Technology	22368	5589	12683	20661	17.18	48	33.06	27	33	1.72
University of Adelaide	8956	1672	11096	7800	23.76	5	53.12	6	83	0.63
University of Canberra	10402	2536	11762	10364	18.07	19	36.26	11	72	1.48
University of Melbourne	13287	1538	11287	12627	24.31	8	58.27	0	77	0.31

University of New England	4233	1388	9450	4272	25.1	2	68.78	??	94	#VALUE!
University of New South Wales	10122	2544	10988	8739	20.08	19	39.9	12	75	1.57
University of Newcastle	6527	33794	10623	5846	22.78	16	56.81	223	89	18.75
University of Queensland	21574	4382	17060		23.32	27	40.77	22	48	1.16
University of South Australia	8846	1010	11416	8729	21.93	6	51.94	2	83	0.46
University of Southern Queensland	11379	4157	12212	10358	19.1	19	50.76	17	78	1.62
University of Sydney	6053	1134	8930	6424	15.45	2	50.22	3	88	0.42
University of Tasmania	5051	32934	7110	4823	2.09	2	2.14	221	-133	22.6
University of Technology, Sydney	6952	3092	10420	6869	12.71	19	34.94	12	80	2.28
University of the Sunshine Coast	11901	16384	11675	9870	20.02	8	54.06	85	78	4
University of Western Australia	11153	10015	10877	10979	26.44	36	62.77	52	82	4.04
University of Wollongong	5063	1019	9741	4506	9.56	2	30.82	2	84	0.4
Victoria University	5254	4599	9832	5063	14.99	25	48.56	21	89	4.48

Use of graphics

By and large graphics in a home page are for decorative or design purposes. Even in the case where they are used for navigation text alternatives would be just as functional. Generally a large proportion of the information to be downloaded is in graphical form averaging 71% of the content. Griffith University with 0), University of Tasmania and La Trobe managed to keep below 25%. University of New England, Australian Catholic University and Royal Melbourne Institute of Technology managed to go over 90%.

Download times

The download time on a 28k link averaged at 20.3 seconds with a standard deviation of 10.7. Griffith University, University of Tasmania, Monash University, La Trobe University, Flinders University and University of Wollongong managed to keep under 10 seconds. In the spirit of World Wide Wait Queensland University of Technology, Macquarie University, Edith Cowan University, Royal Melbourne Institute of Technology and Australian Defence Force Academy managed to get over 30.

Quality of HTML

Thirty one out of the 37 libraries were reported by Tidy as appearing to use HTML proprietary tags rather than conforming to the HTML standard. This is clearly unfortunate.

Only 13 actually used an SGML DOCTYPE header to show which HTML version they were using although some of these specifications were invalid.

An error measure, the average number of errors from Bobby and Tidy per kilobyte of source code, gave an average error rate of 4.3 errors/K with a standard deviation of 6.8, a wide variability.

University of Melbourne, University of Wollongong, University of Sydney, Australian National University, University of South Australia, Royal Melbourne Institute of Technology, University of Adelaide, Macquarie University, Charles Sturt University, Queensland University of Technology and Griffith University managed less than one error/K;

Australian Catholic University, Curtin University of Technology, University of Newcastle, Central Queensland University and University of Tasmania were over 10.

Frames

Only two sites used frames. One, ANU, solely for a graphical effect which could only be discerned by a careful eye.

Scripting

Scripting is often a source of problems with old browsers and with variant versions of scripting languages or proprietary extensions such as those by Microsoft. Scripting should be used with care. Eighteen sites used scripting. W3C reported errors in 16 of these sites in relation to the scripting.

Meta tagging

One would hope that libraries would pay attention the meta tagging and 31 did but sadly only one used the Dublin Core standard.

Disability testing

None of the libraries achieved clear "Bobby approved status" . But 18 libraries only required manual checks of potential problems which the bobby program could not assess automatically. The other 19 libraries clearly failed the test.

Correlation?

There seems to be little correlation between the variables examined but more detailed work is needed. A spreadsheet was used to normalise the data for each variable. The normalisation expressed the data as the number of standard deviations from the mean value for the data set to a value of zero. Plotting normalised error rates against the normalised graphics percentage gave the result in figure 1.

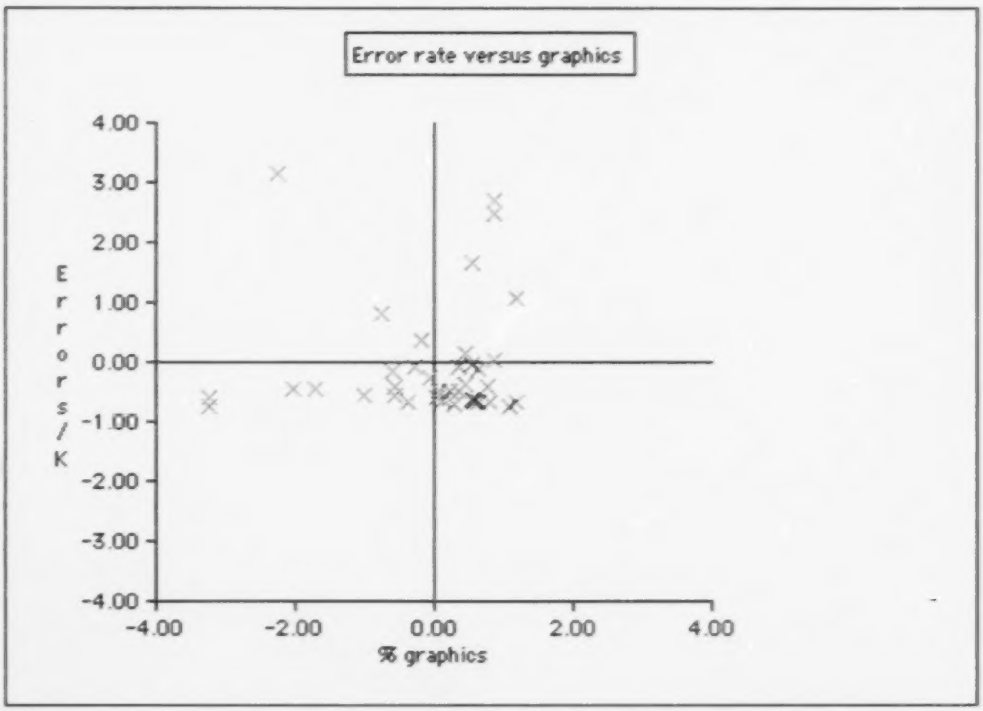

Figure 1

A figure of merit

Taking average of the normalised scores for the error rate, graphics percentage and download times we can use this as a somewhat arbitrary figure of merit

The top 10 institutions on this basis are:

Griffith University, La Trobe University, Swinburne University of Technology, Flinders University, James Cook University, University of Queensland, Charles Sturt University, Monash University, University of Wollongong and Northern Territory University.

The bottom 10 on the other hand are:

Bond University, University of Western Australia, Macquarie University, Australian Catholic University, Curtin University of Technology, Edith Cowan University, Australian Defence Force Academy, Royal Melbourne Institute of Technology, University of Newcastle and Central Queensland University

Conclusion

Australian university library web sites, based on their top page, are disappointing and they all fail to varying degrees. While individually they do not have all these failings the following statements would apply to many of them:

- They place an over reliance on graphics (Griffith being a notable exception)
- Many of the download times are too long to be comfortably used over a phone line.
- Their HTML used does not conform to HTML standards and contains a significant number of errors
- They fail the standard usability tests for use by the visually disabled

Sadly most of these errors could easily be avoided

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